

The opinion in support of the decision being entered today was **not** written
for publication and is **not** binding precedent of the Board.

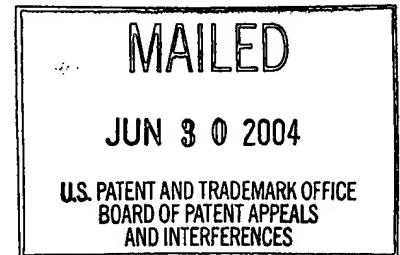
Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHRISTOPHER H. RAEDER

Appeal No. 2004-0239
Application No. 09/383,876



ON BRIEF

Before ABRAMS, STAAB, and NASE, Administrative Patent Judges.
ABRAMS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-12
and 14-19, which are all of the claims pending in this application.

We REVERSE and enter a new rejection under 37 CFR 1.196(b).

BACKGROUND

The appellant's invention relates to polishing semiconductor wafers. An understanding of the invention can be derived from a reading of exemplary claim 1, which appears in the appendix to the appellant's Brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Renteln	5,664,987	Sep. 9, 1997
Yang	6,113,462	Sep. 5, 2000 (filed Dec. 18, 1997)
Hu <u>et al.</u> (Hu)	6,227,947 B1	May 8, 2001 (filed Aug. 3, 1999)

Claims 1-4, 6, 8, 10-12 and 17-19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Renteln.

Claims 5, 7 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Renteln in view of Yang.

Claims 14-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Renteln in view of Hu.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the Answer (Paper No. 22) for the examiner's reasoning in support of the rejections, and to the

Brief (Paper No. 21) and Reply Brief (Paper No. 23) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

*New Rejection By This Panel Of The Board
Of Patent Appeals And Interferences*

Claim 17 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the appellant regards as the invention.

The preamble of claim 17 states that it is directed to “[a] method for chemical-mechanical polishing a wafer” (emphasis added). However, the body of the claim does not recite the steps of a method, but sets forth three apparatus components in means-plus-function format, to wit: “means for using the polishing pad, polishing the wafer at a position relative to the center,” “means for determining that the wafer is being polished in a center-offset manner,” and “means for compensating” While we are mindful that the appellant is free to claim his invention in broad terms and is entitled to the broadest reasonable interpretation of the claim language, because a patentee has the

right to exclude others from making, using and selling the invention covered by the patent, the public must be apprised of exactly what the patent covers, so that those who would approach the area circumscribed by the claims may more readily and accurately determine the boundaries of protection involved and evaluate the possibility of infringement and dominance. It is to this that the second paragraph of Section 112 is directed.¹

From our perspective, the absence of steps in a claim purported to recite a method causes the metes and bounds of the claim not to be determinable to one of ordinary skill in the art. Since this is the case with independent claim 17, a rejection under the second paragraph of 35 U.S.C. § 112 is warranted.

The Examiner's Rejections

The appellant's invention is directed to improvements in chemical-mechanical polishing a semiconductor wafer and comprises, as recited in independent method claim 1, polishing the wafer at a position relative to the center, determining that the wafer is being polished in a center-offset manner and, as a function of this determination, conditioning the pad and positioning the wafer misaligned with respect to the pad. As is set forth in the specification (pages 3, 4, 8 and 9; drawing Figure 3) and in the arguments presented in the Brief (pages 5-7), the wafer that is being

¹See In re Hammack 427 F.2d 1378, 166 USPQ 204 (CCPA 1970).

scrutinized to determine whether it is being polished in a center-offset manner is the same wafer that then is positioned misaligned with respect to the pad after the pad has been conditioned.

The first of the examiner's rejections is that the subject matter recited in claims 1-4, 6, 8, 10-12 and 17-19 is anticipated² by Renteln. The appellant argues on page 5 of the Brief that anticipation is not present because Renteln inspects a wafer after polishing has been completed, conditions the pad on the basis of this information, and then goes on to polish a subsequent wafer which was not the one used to determine the presence of a fault in the pad. This, states the appellant, differs from the appellant's invention as presented in the claims, all of which recite that the wafer which is being polished and used to determine whether polishing is being done in a center-offset manner and whereafter, as a result of such a determination, the pad is conditioned, is the same wafer that subsequently is positioned misaligned with respect to the pad. The appellant also argues that there is no teaching in Renteln of positioning the wafer that was used to determine that the pad needed to be conditioned misaligned with respect to the pad, which is the case in the appellant's system.

²Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of the claimed invention. See, for example, RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

Renteln discloses methods and apparatus for polishing semiconductor wafers. As is the case with the appellant's invention, Renteln also is concerned with conditioning wafer polishing pads in order to properly polish the wafers. Renteln does not explicitly teach that the wafer being inspected in order to determine whether the pad needs to be conditioned is then positioned misaligned to the conditioned pad, and it would appear from the following passages that the information obtained from the polished wafer is used to condition the pad only for subsequent wafers:

Preselected points on just polished wafers are measured for removal rate and such measurements are used to calculate the removal rate [and] . . . [w]hen the removal rate changes by a preselected amount, the polishing pad is conditioned in accordance with the calculations (Abstract; emphasis added).

The present invention is further directed toward a dynamic feedback control system which, based upon data measured from one or more polished wafers, calculates the amount and location of conditioning to be applied to a polishing pad, and based upon such calculations controls a conditioner to contact the polishing pad in accordance with such calculations (column 2, lines 32-38; emphasis added).

Preselected points on either a just polished production wafer or a just polished monitor wafer are measured for remaining film thickness and such measurements are used to calculate the removal rate as a function of wafer radius. When the radius specific removal rate changes by a preselcted amount, the recipe, consisting of time spent by the rotating diamond conditioning wheel as a function of polishing pad radius, is altered based upon such measurements and subsequent calculations (column 2, lines 41-49; emphasis added).

After the semiconductor wafer has been polished for a predetermined period . . . the polishing process 106 is terminated, and a post polishing

process 108 begins . . . [which] consists of cleaning 110 the polished semiconductor wafer on a second platen/pad The wafer is then transferred to a metrology station 114 for measurement 116 of remaining oxide thickness at several points of the wafer Based upon a determination of the rate of oxide removal, a modified recipe 120 is generated for conditioning the polishing pad (column 3, line 52-column 4, line 17; emphasis added).

The examiner's response to the appellant's argument regarding the misaligning of the wafer appears to be that the appellant has not disclosed in the specification as originally filed positioning the wafer "misaligned" with respect to the pad as a function of the wafer being polished in the center-offset manner, as is stated in the claims, and therefore this limitation need not be considered when evaluating the patentability of the claims (see Answer, page 6). We do not agree. The final paragraph of Section 2143.03 of the Manual of Patent Examining Procedure instructs the examiner that all limitations of a claim must be considered and given weight, including limitations which do not find support in the specification as originally filed.³ In addition, while the term "misaligned" does not appear in the specification as originally filed, the examiner did not object to it being added by Amendment B, did not reject the claims under 35 U.S.C. § 112 on the basis that support for "misaligned" was not present, and failed to explain why one of ordinary skill in the art would not have understood the claim and/or would have been unable to determine its metes and bounds in view of the presence of that

³Citing In re Grasselli, 231 USPQ 393 (Bd. App. 1983), aff'd mem. 738 F2d. 453 (Fed. Cir. 1984).

term. The practical result of this is to deprive the appellant of any opportunity to point out where the required support for this term exists in the specification. It therefore is our view that the presumption exists that support for "misaligned" is present in the specification to the extent that the artisan would have understood the metes and bounds of the claims, and the term should have been considered by the examiner in evaluating the patentability of the claims.

For the reasons set forth above, the Section 102 rejection of independent claims 1, 11 and 12 and dependent claims 2-4, 6, 8, 10, 18 and 19 is not sustained.

We have entered a new rejection of claim 17 under the second paragraph of Section 112 on the grounds of indefiniteness. Since it is clear to us that considerable speculation and assumptions are necessary to determine the metes and bounds of what is being claimed in this claim, and since a rejection cannot be based upon speculation and assumptions, we are constrained to reverse the examiner's rejection of claim 17. See In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962). However, this action should not be construed as an indication that the claimed subject matter would have been patentable in view of the prior art cited against the claim. We have not addressed this issue, for to do so would require on our part the very speculation which formed the basis of our rejection under Section 112.

The examiner also has rejected claims 5, 7 and 9, which depend from claim 1, under Section 103 as being obvious⁴ in view of the combined teachings of Renteln and Yang, and claims 14-16, which depend from claim 12, as being obvious in view of Renteln and Hu. Even considering Renteln in the light of Section 103, the deficiencies pointed out above in our discussion of the Section 102 rejection remain, and they are not overcome by further consideration of Yang or Hu. This being the case, these two rejections also are not sustained.

CONCLUSION

None of the examiner's rejections is sustained.

The decision of the examiner is reversed.

A new rejection of claim 17 under 35 U.S.C. § 112, second paragraph, has been entered pursuant to 37 CFR 1.196(b).

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b), which provides that "[a] new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options

⁴The test for obviousness is what the combined teachings of the prior art would have suggested to one of ordinary skill in the art. See, for example, In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

with respect to the new grounds of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

- (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .
- (2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED; 37 CFR 1.196(b)


NEAL E. ABRAMS
Administrative Patent Judge

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BOARD OF PATENT
APPEALS
AND
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LAWRENCE J. STAAB
Administrative Patent Judge

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JEFFREY V. NASE
Administrative Patent Judge

NEA/dpv

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ROBERT J. CRAWFORD
CRAWFORD P.L.L.C.
1270 NORTHLAND DRIVE
SUITE 390
ST. PAUL, MN 55120